

## LA-UR-14-20727

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Title: Environmental Management System Tools

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Intended for: Request from an environmental educator for information regarding the structure used to implement compliance with ISO 14001 - for use in classroom exercise.

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## TR 2.7 Environmental Aspect Descriptions

Environmental Aspects	Description	Examples	
Air Emissions	Activities that release or have the potential to release material into the air.	Operations that have point source air emissions from stacks, vents, ducts, or pipes	Greenhouse Gas contributors, such as refrigerants, travel, energy consumption, solid waste volumes, fluorine gases
		Asphalt and concrete plants	Vehicle (trucks, cars, four wheelers, etc.) operation
		Heaters and boilers	Paint and spray booths
		Electrical generators	Aerosol cans
		Compressed gases	Open burning/detonation activities
		Combustion sources	Air compressors
		Internal-combustion engines	Wood chippers/shredders
Interaction with Surface Water and Storm Water	Activities that release or have the potential to release material into a waterway or onto the ground near a waterway.	Discharges from potable and non-potable water supplies	Activities requiring a Notice of Intent (NOI) to discharge

Environmental Aspects	Description	Examples	
		Discharges from permitted outfalls	Work activities within a watercourse
		Spills, unintended discharges, accidental releases to the environment	Discharges of storm water collected in secondary containment areas
		Discharges of steam condensate	Activities requiring a SWPPP
		Water line and hydrant treatment and flushing	Activities requiring a USCOE 404 Dredge and Fill Permit
		Storage of equipment or parking of vehicles off-road	Activities or facilities covered under a SWIP or MSGP
Discharge to Wastewater Systems	Activities that release or have the potential to release material to or from a wastewater treatment system (sanitary, chemical, or radiological). This does not include isolated septic systems.	Laboratory sinks plumbed to sanitary or radiological drains	Kitchen and bathrooms plumbed to sanitary drains.
Interaction with Drinking Water Supplies/Systems or Groundwater	Activities that release or have the potential to release material into a drinking water supply system or into the groundwater. This includes planned or unplanned releases onto the ground or into surface water that have the potential to	Activities that use potable water, for example:  Using potable water in kitchens, bathrooms	Installing or abandoning drinking water supply systems or groundwater wells

Environmental Aspects	Description	Examples	
	migrate to a drinking water supply. Impacts can be positive or negative.	Using potable water in laboratory settings, in hoods, as source for machinery and process water  Cooling tower water supply  Landscape watering	Operating and maintaining drinking water supply systems or groundwater wells
Work within or near Floodplains and Wetlands	Activities that release or have the potential to release material onto or into a floodplain, wetland, or area of overland flow.	Monitoring well operations	Sampling
Interaction with Wildlife and/or Habitat	Activities that impact or have the potential to impact wildlife or wildlife habitat. This includes direct impacts caused by workers and their work activities or indirect impacts that effect behavioral changes.	Landscape development; removal of weeds, brush, trees or invasive-species; trail work; road easement maintenance; establishment or modification of paths, walkways, clearings.	Installation or maintenance of fencing, buildings, power lines, towers, drainage or other structures; installation and operation of night lighting ; work operations that generate noise.
Biological Hazards	Activities that generate, use, or dispose of biological agents. This excludes human viral, bacterial, or blood-borne pathogens.	Handling of some wastes, animals	Management of medical materials and by-products
Interaction with Soil Resources	Activities that release or have potential to release material onto or into the ground. This includes planned or unplanned deposition of air-borne particulates and releases of solids or	Operations that have point source air emissions from stacks, vents, ducts, or pipes	Storage containers (fuel tanks, chemical tanks, septic systems, etc.)

Environmental Aspects	Description	Examples	
	liquids onto or into the ground.		
		Above- or below-ground transmission lines (water, sewer, gas, or wastewater)	Ground-disturbing construction activities
		Groundwater well construction and abandonment	Off-road vehicles
		Electrical equipment such as transformers	Installation and maintenance of best management practices for surface water and storm water control
		Physical removal of dead wood for fire suppression and control	Introduction of vegetation (native or non-native)
		Activities that have the potential to disturb wildlife during nesting season	
Spark or flame producing	Activities that cause or have the potential to start a fire or wildfire.	Off-road vehicles	Outdoor construction or maintenance work, welding activities
Cultural/Historical Resource	Activities that impact or have the potential to	Maintenance or expansion of	Maintenance, modification, or

Environmental Aspects	Description	Examples	
Disturbance	impact cultural or historical resources. Resources include historical buildings, buildings of special significance, archaeological sites, and historic homesteads, and trails.	existing, established areas (trails, walkways, clearings, roads, easements)	demolition of structures, including potentially or designated historic structures
		Ground-disturbing activities – below grade or surface areas	Off-road vehicle use
		Firing site activities (vibrations)	Archaeological excavations
Visual Resources	Activities that impact or have the potential to impact visual landscapes.	Construction, management and maintenance of utility corridors and power transmission systems through non-urban areas	Construction, management and maintenance of staging areas, storage yards, debris piles, litter, and other “eye-sores”
		Design, construction, management and maintenance of buildings, towers, stacks, domes, signs, etc.	Smoke, steam, night lighting
Hazardous or Radioactive Material and Waste Packaging & Transportation	Activities that handle, package, or transport hazardous waste or radioactive material.	Chemical transportation	LLW, Mixed or TRU waste transportation
Radioactive Waste	Activities that generate or manage (handle,	Laboratory, R&D procedures using or generating radioactive	Clean up of contaminated sites or

Environmental Aspects	Description	Examples	
Generation & Management	store, or dispose of) radioactive waste.	material	historical waste disposal areas.
Hazardous or Mixed-Waste Generation & Management	Activities that generate or manage (handle, store, treat, or dispose of) hazardous or mixed waste.	Laboratory, R&D procedures using or generating hazardous or mixed (chemical and radiological) materials	Disposal of unused, unspent Laboratory chemicals
Solid or Sanitary Waste Generation and Management	Activities that generate or manage (handle, store, treat, or dispose of) non-hazardous and non-radioactive waste intended for disposal at a municipal or industrial waste landfill.	Laboratory, machining, process operations wastes (not hazardous or radioactive)	Paper, cardboard, wood, food stuff, packaging, PPE, equipment, furniture – all objects potentially waste that are not hazardous or radioactive
		Activities that improve reduction of material waste products – for example, conversion of paper documentation to electronic, expansion of recycling and reuse	Non-recyclable waste, for example some office waste (plastic binders, transparencies, etc.) and some construction and demolition debris
Interaction with Contaminated Sites	Activities that have the potential to increase or spread contamination because they are conducted within the boundary of or in close proximity to contaminated areas. Contaminated areas include potential release sites (PRSs), radiological sites or nuclear facilities, or high-explosive sites.	Construction activities	Remediation activities

Environmental Aspects	Description	Examples	
Chemical (industrial and laboratory) Use and Storage	Activities resulting in the purchase, use, management, or storage of chemicals.	Application of pesticides and fertilizers	Vehicle operation and maintenance (fuels, coolants, lubricants, etc.)
		Research laboratories	Building cleaning and maintenance (janitorial supplies, etc.)
Radioactive Material Use and Storage	Activities that handle or store radioactive material.	Radioactive source management, use and storage	Radioactive material machining
Surplus Properties and Material Management	Activities that manage (handle or store) surplus supplies, real estate, or other property.	Managing (leasing, renting, selling, or purchasing) inactive real estate	Managing (storing, using, recycling, reusing, disposing of) surplus property
		Decontamination and decommissioning facilities	Furniture, laboratory equipment, material stock/supply, storage and staging
Resource Use and Conservation	Activities or practices that impact resource use and effect conservation; may increase or reduce demand or wastes, may drive increases in efficiency of resource use (labor, natural material, energy, etc.), use of alternative material, or reuse/recycling opportunities.	Applying sustainable design principles, for example, cool roofs, natural lighting, insulated glass, recycled or low-impact building materials	Amount or change in the amount of energy or water consumption required for a scope of work.



Environmental Aspects	Description	Examples	
		Procuring alternative energy or fuel sources for LANL.	Purchasing “green” or environmentally-preferable products
		Reuse and repurpose of materials, equipment and supplies	Applying equipment, technology, or process modifications to increase efficiency or provide for alternative material use
Storage of hazardous or radioactive materials and wastes in tanks (includes non-regulated tanks, above ground storage tanks, etc.; does not include septic tanks.)	Activities that handle or store non-hazardous and non-radioactive material and waste. This excludes sanitary waste storage (such as septic systems)	Installing or removing above- or below-ground tanks	Operating or maintaining above- or below-ground tanks
Engineered Nanomaterials	Activities that create nanoparticles. This excludes natural or incidentally-formed nanoparticles. Biomolecules (proteins, nucleic acids, carbohydrates, etc.) should be addressed under Biological Safety.	Nanotechnology R&D that generates potentially hazardous or radioactive nanoparticle byproducts requiring environmental controls	

# TR 2.4 Activities, Products and Services With Likely Aspects (Rev. 1)

Directorate:		Date:		Preparer(s):																		
<b>A. Directorate, Activities, Products and Services</b> (Identify high level categories and list bullet points under them for specific activities, products and services.)	<b>B. Environmental Aspects (Refer to TR 2.7, Revision 1, Aspect Descriptions)</b>																					
	Air Emissions	Interaction with Surface Water and Storm Water	Discharge to Wastewater Systems	Interaction with Drinking Water Supplies/ Systems or Groundwater	Work within or near Floodplains and Wetlands	Interaction with Wildlife and/or Habitat	Biological Hazards	Interaction with Soil Resources	Spark or flame producing	Cultural/Historical Resource Disturbance	Visual Resources	Hazardous/Radioactive Material and Waste Packaging & Transportation	Radioactive Waste Generation & Management	Hazardous or Mixed Waste Generation & Management	Solid or Sanitary Waste Generation & Management	Interaction with Contaminated Sites	Chemical Use and Storage	Radioactive Material Use and Storage	Surplus Properties and Materials Management	Resource Use and Conservation	Storage of Hazardous or Radioactive Materials and Wastes in Tanks	Engineered Nanomaterials



TR 2.10, Environmental Aspect and Impact Significance Form (Rev. 2)

Directorate:		Preparer:	
High Level Category from TR 2.4:		Date:	

C. Environmental Aspect	D. Aspect Characteristics	E. Impacts (Check all that apply. For negative impacts, assume no controls are in place or that the controls have failed.)												F. Brief Description of the Activity	G. Significance (Check all that apply, refer to SD400 and TR 2.15)					H. Remarks and brief description of operational controls, if any
		Negative						Positive							EI	PP	LR	SC	MI	
		A	W	S	B	C	N	A	W	S	B	C	N							
Air Emissions	Vehicle emissions																			
	Radionuclides																			
	Chemicals																			
	Combustion emissions																			
	Fugitive dust																			
	Asbestos																			
	Volatile organic carbons (VOCs)																			
	Hazardous air pollutants																			
	Particulates																			
	Open burning																			
	GHG, ozone- depleting																			
Interaction with surface water and storm water	Contaminate surface water																			
	Contaminate storm water																			
	Erosion and sediment transport																			
	Drainage channels																			
	Downstream water supplies																			
	Modification,																			

LEGEND

A	Air	W	Water	S	Soil	B	Biota	C	Cultural Resources	N	Natural Resources	EI	Environmental impact	PP	Pollution Prevention	LR	Legal & other requirements	SC	Stakeholder concern	MI	Mission Impact
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C. Environmental Aspect	D. Aspect Characteristics	E. Impacts (Check all that apply. For negative impacts, assume no controls are in place or that the controls have failed.)												F. Brief Description of the Activity	G. Significance (Check all that apply, refer to SD400 and TR 2.15)					H. Remarks and brief description of operational controls, if any
		Negative						Positive							EI	PP	LR	SC	MI	
		A	W	S	B	C	N	A	W	S	B	C	N							
	repair, or removal of above or below storage tanks																			
	Vaulted petroleum product storage tank modification, repair or removal																			
	Modification, repair, or removal of other storage vessels																			
	Modification, repair, or removal of equipment (e.g. transformers)																			
	Changing the liquid stored in above or below ground tank																			
	Other activity that may impact facility SPCC Plan																			
Discharge to wastewater systems	Discharge wastewater																			
	Operate and maintain wastewater facilities																			
Interaction with drinking water supplies and systems or groundwater	Maintaining supply systems and equipment																			
	Constructing																			

#### LEGEND

A	Air	W	Water	S	Soil	B	Biota	C	Cultural Resources	N	Natural Resources	EI	Environmental impact	PP	Pollution Prevention	LR	Legal & other requirements	SC	Stakeholder concern	MI	Mission Impact
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		Negative						Positive							EI	PP	LR	SC	MI	
		A	W	S	B	C	N	A	W	S	B	C	N							
	supply systems																			
	Operating supply systems																			
	Contaminate drinking water																			
	Contaminate wells																			
	Damage wells																			
	Operating wells																			
	Maintaining wells																			
	Constructing wells																			
	Abandoning wells																			
Work w/in or near floodplains or wetlands	Floodplains																			
	Wetlands																			
	Areas subject to overland flows of water (e.g. waters of the US)																			
Interaction with wildlife and/or habitat	Work within threatened or endangered species habitat																			
	Cutting vegetation (including trees and shrubs) between 1 June and 31 July																			
	Revegetation																			
	Noxious weed & invasive species																			

#### LEGEND

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		Negative						Positive							EI	PP	LR	SC	MI	
		A	W	S	B	C	N	A	W	S	B	C	N							
	control																			
	Power lines and equipment																			
	Meterological or communications towers																			
	Building or lighting system design																			
	Greenfield development																			
Biological hazards	Using/generating biological materials (e.g. micro-organisms)																			
	Generating biologically hazardous waste																			
Interaction with soil resources	Contaminated air-borne particulate releases																			
	Releases of solid materials																			
	Releases of liquid materials																			
	Grading or excavation																			
	Off-road vehicle use																			
Spark or flame producing	Spark-producing activities																			
	Off-road vehicle use																			
	Open burning																			
	Structural																			

#### LEGEND

A	Air	W	Water	S	Soil	B	Biota	C	Cultural Resources	N	Natural Resources	EI	Environmental impact	PP	Pollution Prevention	LR	Legal & other requirements	SC	Stakeholder concern	MI	Mission Impact
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		Negative						Positive							EI	PP	LR	SC	MI		
		A	W	S	B	C	N	A	W	S	B	C	N								
	protection																				
	Wildfire suppression																				
Cultural and historical resource disturbance	Soil grading																				
	Excavating																				
	Off-road vehicle use																				
	Vegetation removal																				
	Working in areas near cultural resources																				
	Maintenance, modification, or demolition of historical structures																				
Cultural and historical resource disturbance	Soil grading																				
	Excavating																				
	Off-road vehicle use																				
	Vegetation removal																				
	Working in areas near cultural resources																				
	Maintenance, modification, or demolition of historical structures																				

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		Negative						Positive							EI	PP	LR	SC	MI	
		A	W	S	B	C	N	A	W	S	B	C	N							
Visual resources	Multi-story buildings (especially those w/ reflective surfaces																			
	Radio towers																			
	Water towers																			
	Stacks																			
	Controlled burns																			
	Power lines																			
	Linear cuts through wooded areas (i.e., power lines)																			
	Construction staging areas																			
	Debris from maintenance and construction work																			
Hazardous or radioactive material and waste packaging and transportation	Handling hazardous waste (including solid, liquid, etc.) or radioactive materials																			
	Packaging hazardous waste (including solid, liquid, etc.) or radioactive materials																			
	Transporting hazardous waste (including solid, liquid, etc.) or radioactive materials																			

#### LEGEND

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		Negative						Positive							EI	PP	LR	SC	MI	
		A	W	S	B	C	N	A	W	S	B	C	N							
Radioactive waste generation and management	Generating radioactive waste (including liquid, solid, etc.)																			
	Handling radioactive waste (including liquid, solid, etc.)																			
	Store radioactive waste (including liquid, solid, etc.)																			
	Dispose of radioactive waste (including liquid, solid, etc.)																			
Hazardous or mixed waste generation and management	Generating hazardous waste (including liquid, solid, etc.)																			
	Handling hazardous waste (including liquid, solid, etc.)																			
	Store hazardous waste (including liquid, solid, etc.)																			
	Treat hazardous waste (including liquid, solid, etc.)																			
	Generating mixed waste (including liquid, solid, etc.)																			
	Handling mixed waste (including liquid, solid, etc.)																			
	Store mixed waste (including liquid, solid, etc.)																			

#### LEGEND

A	Air	W	Water	S	Soil	B	Biota	C	Cultural Resources	N	Natural Resources	EI	Environmental impact	PP	Pollution Prevention	LR	Legal & other requirements	SC	Stakeholder concern	MI	Mission Impact
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		Negative						Positive							EI	PP	LR	SC	MI	
		A	W	S	B	C	N	A	W	S	B	C	N							
	Treat mixed waste (including liquid, solid, etc.)																			
Solid waste generation and management	Generate solid waste																			
	Manage solid waste																			
Interaction w/ contaminated sites	Activities w/in or near a PRS																			
	Activities w/in or near a RCA																			
	Activities w/in or near a Cat. 3 Radiological site																			
	Activities w/in or near a Cat. 2 nuclear facility																			
	Activities w/in or near a high- explosives debris site																			
Chemical (industrial and laboratory) use and storage	Purchase laboratory chemicals																			
	Store laboratory chemicals																			
	Use laboratory chemicals																			
	Purchase industrial chemicals																			
	Store industrial chemicals																			
	Use industrial																			

#### LEGEND

A	Air	W	Water	S	Soil	B	Biota	C	Cultural Resources	N	Natural Resources	EI	Environmental impact	PP	Pollution Prevention	LR	Legal & other requirements	SC	Stakeholder concern	MI	Mission Impact
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		Negative						Positive							EI	PP	LR	SC	MI		
		A	W	S	B	C	N	A	W	S	B	C	N								
	chemicals																				
	Purchase pesticides																				
	Store pesticides																				
	Use pesticides																				
	Purchase fertilizers																				
	Store fertilizers																				
	Use fertilizers																				
Radioactive material use and storage	Handle radioactive materials																				
	Store radioactive materials																				
Surplus properties and materials management	Manage surplus property																				
	Manage inactive facilities																				
	Sale of LANL excess property																				
	Reuse, storage, or disposition of LANL excess property																				
	Facility deactivation																				
	Leasing, renting, or purchasing real estate property																				
Resource use and Conservation	Application of sustainable design principles																				
	Energy use																				

#### LEGEND

A	Air	W	Water	S	Soil	B	Biota	C	Cultural Resources	N	Natural Resources	EI	Environmental impact	PP	Pollution Prevention	LR	Legal & other requirements	SC	Stakeholder concern	MI	Mission Impact
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		Negative						Positive							EI	PP	LR	SC	MI	
		A	W	S	B	C	N	A	W	S	B	C	N							
	reduction																			
	Water use reduction																			
	Fuel use Reduction																			
	Waste, effluent, or air emission reduction																			
	Green chemistry																			
	Efficient use of materials																			
	Environmentally Preferable Purchasing																			
	Sustainable land use practices (Brownfield vs Greenfield/wildlife corridors, etc)																			
	Improved utilization of materials and equipment and reuse																			
	LEED or high performance building design in construction or renovation																			
	Land / site restoration																			
	Recycling																			
	Other sustainable practice																			
Storage of hazardous or radioactive	Maintenance of aboveground tanks																			

#### LEGEND

A	Air	W	Water	S	Soil	B	Biota	C	Cultural Resources	N	Natural Resources	EI	Environmental impact	PP	Pollution Prevention	LR	Legal & other requirements	SC	Stakeholder concern	MI	Mission Impact
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		Negative						Positive							EI	PP	LR	SC	MI	
		A	W	S	B	C	N	A	W	S	B	C	N							
materials and wastes in tanks (Includes non- regulated underground tanks; does not include septic tanks.)																				
	Operation of aboveground tanks																			
	Modification of aboveground tanks																			
	Installation of aboveground tanks																			
	Removal of aboveground tanks																			
	Maintenance of belowground tanks																			
	Operation of belowground tanks																			
	Modification of belowground tanks																			
	Installation of belowground tanks																			
	Removal of belowground tanks																			
Engineered Nanomaterials	Creation of nanomaterials (other than																			

#### LEGEND

A	Air	W	Water	S	Soil	B	Biota	C	Cultural Resources	N	Natural Resources	EI	Environmental impact	PP	Pollution Prevention	LR	Legal & other requirements	SC	Stakeholder concern	MI	Mission Impact
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		Negative						Positive							EI	PP	LR	SC	MI	
		A	W	S	B	C	N	A	W	S	B	C	N							
	biomolecules)																			
	Handling of nanomaterials (other than biomolecules)																			
	Storage of nanomaterials (other than biomolecules)																			
	Transport of nanomaterials (other than biomolecules)																			
	Disposal of nanomaterials (other than biomolecules)																			

#### LEGEND

A	Air	W	Water	S	Soil	B	Biota	C	Cultural Resources	N	Natural Resources	EI	Environmental impact	PP	Pollution Prevention	LR	Legal & other requirements	SC	Stakeholder concern	MI	Mission Impact
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## Priority Significant Environmental Aspects for [Organization] FYXX

Significant Environmental Aspect	Prioritization Considerations (For more information see TR 2.21)						Priority	Objective		Comments / references to support your decision
	Legal & Other Requirements	Business Realities & Mission Impact	Views of Interested Parties	Pollution Prevention & Continual Improvement	Technology Options & Feasibility	Cost Effectiveness		Yes	No	
Air Emissions										
Interaction with Surface Water and Storm Water										
Discharge to Wastewater Systems										
Interaction with Drinking Water Supplies/ Systems or Groundwater										
Work within or near Floodplains and Wetlands										
Interaction with Wildlife and/or Habitat										
Biological Hazards										
Interaction with Soil Resources										
Spark or flame producing										
Cultural/Historical Resource Disturbance										
Visual Resources										
Hazardous/Radioactive Material and Waste Packaging & Transportation										





Significant Environmental Aspect	Prioritization Considerations (For more information see TR 2.21)						Priority	Objective		Comments / references to support your decision
	Legal & Other Requirements	Business Realities & Mission Impact	Views of Interested Parties	Pollution Prevention & Continual Improvement	Technology Options & Feasibility	Cost Effectiveness		Yes	No	
Radioactive Waste Generation & Management										
Hazardous or Mixed Waste Generation & Management										
Solid or Sanitary Waste Generation & Management										
Interaction with Contaminated Sites										
Chemical Use and Storage										
Radioactive Material Use and Storage										
Surplus Properties and Materials Management										
Resource Use and Conservation										
Storage of Hazardous or Radioactive Materials and Wastes in Tanks										
Engineered Nanomaterials										

**Plan Approvals**

Organization		Email	
Action Plan EMS POC		Phone	

**EMS Participants**

Name	Group

**EAP Approvals (To Be Obtained)**

Name	Title	Date	Signature
	Associate Director		



### **Objectives, Targets, and Actions**

<b>Objective #</b>	
<b>Significant Environmental Aspects (Addressed Under This Objective)</b>	
<b>Institutional Objectives (Addressed Under This Objective)</b>	
<b>Notes</b>	

<b>Target #</b>	
<b>Performance Indicator (SMART Metric)</b>	

<b>Action(s)</b>	<b>Who</b>	<b>Due</b>	<b>Resources (\$, people, time, equipment, materials)</b>	<b>Notes</b>



<b>Target #</b>	
<b>Performance Indicator (SMART Metric)</b>	

Action(s)	Who	Due	Resources (\$, people, time, equipment, materials)	Notes

<b>Target #</b>	
<b>Performance Indicator (SMART Metric)</b>	

Action(s)	Who	Due	Resources (\$, people, time, equipment, materials)	Notes